

CLAIMS

What is claimed is:

1. A system for treating a vascular condition, comprising:
an inflation adaptor including a housing;
a clamping device positioned within the housing, the clamping device including a jaw and an anvil; and
a medial v-groove alignment block; wherein a portion of an extended valve stem and a hollow guidewire are received in the medial v-groove alignment block and are engaged by the clamping device to allow the extended valve stem and the hollow guidewire to be axially translated relative to each other to control a flow of an inflation fluid through the hollow guidewire when the clamping device is in a clamped position.
2. The system of claim 1 wherein the jaw has a planar surface.
3. The system of claim 1 wherein the jaw includes a tapered section having a shoulder to contain the extended valve stem and the hollow guidewire when the extended valve stem and the hollow guidewire are positioned in the medial v-groove alignment block.
4. The system of claim 1 wherein the medial v-groove alignment block is attached to the anvil.
5. The system of claim 1 wherein the anvil is adapted to receive the medial v-groove alignment block.
6. The system of claim 1 wherein the medial v-groove alignment block is attached to or formed integrally with the housing.

7. The system of claim 1 wherein the anvil includes an elongated longitudinally oriented channel.

8. The system of claim 1 wherein the clamping device includes a set of distal pads and a set of medial pads to engage the hollow guidewire received in the medial v-groove alignment block.

9. The system of claim 1 wherein the clamping device includes a set of sliding pads to engage the extended valve stem and to control the axial translation of the valve stem relative to the hollow guidewire.

10. The system of claim 1 further comprising:
a distal v-groove alignment block attached proximate to a distal end of the inflation adaptor, wherein the distal v-groove alignment block is axially aligned with the medial v-groove alignment block to receive the hollow guidewire.

11. The system of claim 1 further comprising:
a proximal v-groove alignment block attached proximate to a proximal end of the inflation adaptor, wherein the proximal v-groove alignment block is axially aligned with the medial v-groove alignment block to receive the extended valve stem.

12. The system of claim 1 further comprising:
a multi-position actuation knob coupled to the clamping device, wherein a first position of the actuation knob allows insertion of the extended valve stem and the hollow guidewire into the clamping device, and wherein moving the actuation knob from the first position to a second position of the actuation knob activates the clamping device to engage the extended valve stem and the hollow guidewire, and wherein moving the actuation knob from the second position to a third position of the actuation knob translates the valve stem relative to the hollow guidewire to control the flow of the inflation fluid into the inflatable balloon.

13. The system of claim 1 further comprising:
an inflation fluid supply port, wherein the inflation fluid from an inflation fluid supply connected to the inflation fluid supply port is injected through a portion of the hollow guidewire when the clamping device is in a clamped position and a plug valve within the hollow guidewire is in an open position.

14. The system of claim 1 further comprising:
an inflatable balloon attached proximate to a distal end of the hollow guidewire; wherein a portion of the extended valve stem and the hollow guidewire are received in the medial v-groove alignment block and are engaged by the clamping device to allow the valve stem and the hollow guidewire to be axially translated relative to each other to control the flow of the inflation fluid into the inflatable balloon.

15. The system of claim 14 wherein the inflatable balloon comprises one of an occlusion balloon, an angioplasty balloon, and a stent-deployment balloon.

16. The system of claim 14 further comprising:

a plug valve having a valve plug attached to a portion of the valve stem positioned within a central lumen of the hollow guidewire, wherein the plug valve is positioned in one of an open position or a closed position when the valve stem and the hollow guidewire are translated relative to each other to control the flow of the inflation fluid into the inflatable balloon.

17. The system of claim 14 further comprising:

a multi-position actuation knob coupled to the clamping device, wherein a first position of the actuation knob allows insertion of the extended valve stem and the hollow guidewire into the clamping device, and wherein moving the actuation knob from the first position to a second position of the actuation knob activates the clamping device to engage the extended valve stem and the hollow guidewire, and wherein moving the actuation knob from the second position to a third position of the actuation knob translates the valve stem relative to the hollow guidewire to control the flow of the inflation fluid into the inflatable balloon.

18. The system of claim 14 further comprising:

an inflation fluid supply coupled to the inflation adaptor, wherein the inflation fluid from the inflation fluid supply is injected through a portion of the hollow guidewire into an interior region of the inflatable balloon when the clamping device is in a clamped position and a plug valve within the hollow guidewire is in an open position.

19. A method of operating an inflation adaptor, comprising:
positioning the inflation adaptor to receive a valve stem partially
extended from a proximal end of a hollow guidewire to define a first valve
configuration;
inserting the extended valve stem and the hollow guidewire into a
medial v-groove alignment block;
clamping respective portions of the extended valve stem and the
hollow guidewire within the inflation adaptor; and
relatively translating the valve stem and the hollow guidewire to a
second valve configuration to control a flow of an inflation fluid through a portion
of the hollow guidewire.

20. The method of claim 19 wherein inserting the extended valve stem
and the hollow guidewire into the medial v-groove alignment block comprises
slidably directing the extended valve stem and the hollow guidewire into the
medial v-groove alignment block.

21. The method of claim 19 wherein clamping the respective portions of
the extended valve stem and the hollow guidewire comprises engaging the valve
stem with a set of distal pads and a set of medial pads, and engaging the hollow
guidewire with a set of sliding pads.

22. The method of claim 19 wherein the first valve configuration is a
closed valve position.

23. The method of claim 19 wherein the second valve configuration is
an open valve position.

24. The method of claim 19 further comprising:
inserting the hollow guidewire into a distal v-groove alignment
block.
25. The method of claim 19 further comprising:
inserting the extended valve stem into a proximal v-groove
alignment block.
26. The method of claim 19 further comprising:
coupling an inflation fluid supply to the inflation adaptor.
27. The method of claim 19 further comprising:
inflating an inflatable balloon attached proximate to a distal end of
the hollow guidewire while in the clamped position.
28. The method of claim 19 further comprising:
deflating an inflatable balloon attached proximate to a distal end of
the hollow guidewire while in the clamped position.